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ABSTRACT

A study was designed 1) to develop and test a conceptual model for viewing teacher-pupil communicative relationships in the classroom, 2) to determine if systematic observations of teacher behavior are useful in analyzing communication events, and 3) to determine if data on teacher nonverbal and verbal behavior are more useful than on verbal behavior alone. The PIT Model was developed as a communication framework for use in identifying classroom communication events by their function. Each event is classified as "institutional (I)," "task oriented (T)," "personal (P)," or "mixed (M)"; then each is further identified as "individual" or "group" and its duration recorded. Videotapes of 36 lessons (three class periods by each of 12 junior high teachers) were coded using the PIT Model and then the IDER system (French and Gallagher) which utilizes the 10 verbal categories of the Flanders interaction analysis system, adding appropriate nonverbal dimensions for each. Data treatment included plotting both IDER and PIT data into one matrix as well as separate analyses for IDER and PIT data for individual teachers and lessons, for males and females, and for all subjects. Findings include these: 1) nonverbal behavior cannot be ignored; 2) the PIT Model is both meaningful and useful; 3) in these classrooms there is lack of emphasis on personalized communication and more focus on the group than the individual; 4) use of more than one instrument in observing and analyzing the same classroom behavior is valuable. (JS)

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A STUDY OF COMMUNICATION EVENTS

AND TEACHER BEHAVIOR: VERBAL

AND NONVERBAL

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A STUDY OF COMMUNICATION EVENTS AND TEACHER BEHAVIOR:

VERBAL AND NONVERBAL¹

Although analysis of teacher behavior has provided bits and pieces of significant information about instructional performance, data gained from a number of investigations appear to be limited in their utility because they characterize only single facets of a teacher's total behavior at any given time. Some investigators have not been concerned by this fact. Indeed, several theories and much research have been based on the assumption that a single aspect of a teacher's behavior adequately reflects his total behavior. Only further investigation can prove or disprove these assumptions. However, the development of observational techniques which allow the observer to characterize more than one aspect of teacher behavior at any given time appears to be most desirable.

As Biddle (1964) has pointed out, the value of teacher behavior analysis lies in the relationship of the acquired data to the effectiveness of teacher instructional performance. To establish this relationship, it is essential that the demands of the classroom situation, the demands of the subject content to be taught and learned, and the personal needs, goals, and emotions of both pupils and teacher in a particular situation be considered. Teacher behavior data become meaningful only when they are placed in a context created by a clear conceptualization of the specific situation in which the behavior is exhibited.

While the study reported here was addressed to some of the problems in teacher behavior and instructional performance research discussed in the preceding paragraphs, it was essentially descriptive and applicative² in nature.

¹ Paper presented at the 1970 annual meeting of The American Educational Research Association. Minneapolis: March, 1970

² The term applicative is used to indicate an attempt to establish the relationship of theory to empirical data.

The purposes of the study were: 1) to develop and test a meaningful conceptual model for viewing teacher-pupil communicative relationships in the classroom; 2) to determine if systematic observations of teacher behavior are useful in analyzing communication events; and 3) to determine if systematic observations of both teacher nonverbal and verbal behavior provide more useful data for analyzing interactive relationships between teachers and pupils than do observations of teacher verbal behavior which exclude nonverbal data.

METHOD

The PIT Model ³

In conceptualizing a model of teacher-pupil interactive relationships, the communication framework appeared both appropriate and logical. The attempts of researchers such as Smith and Meux (1962), Galloway (1962), Lewis, Newell and Withall (1961), Bellack (1963) and Openshaw and Cyphert (1966) to isolate communication entities in the classroom seemed especially significant. However, the investigator's concern for a model which: 1) encompassed all aspects of the communication process (sender, message, channel, receiver); and 2) depended upon function of communication rather than upon arbitrary elements such as duration or characteristics of behavior led to the conceptualization of interaction as a series of communication events.

A communication event can be defined as a sequence of teacher-pupil communicative behaviors separated from preceding and succeeding sequences of behaviors (events) by naturally occurring boundaries. As appropriately defined by Galloway (1962), these boundaries are:

³ For a more detailed description of the PIT model see "Communication Events: A New Look At Classroom Interactions" in the March, 1970 issue of Educational Leadership.

1) a variation or change in the direction of a teacher's communicative behavior; 2) a change in the teacher's behavior toward a new interaction; 3) the occurrence of a significant or potent act which appears influential; and 4) social intervention in which an interruption is instigated by either a pupil or the teacher. Events can occupy either short or long intervals of time.

Observation of elementary and secondary classrooms suggests that what goes on there might be described as communication events which are institutional (those which relate to managing the classroom and meeting the expectations of the institution), task-oriented (those which focus on the teaching and learning of subject matter content whether cognitive, affective, or skill-oriented), personal (those in which personal needs, goals, and emotions of a pupil, a group of pupils and/or the teacher provide the central focus) or mixed in nature (those which contain elements of more than one of the event types previously described).

Any of these event types can involve the teacher with a single pupil or with a group of pupils. Since any attempt to identify the focus and intent of interaction in the classroom at any given time must include clarification of the number of participants involved, institutional, task, personal or mixed events must be classified as individual (interaction between the teacher and one pupil) or group (interaction between the teacher and several pupils).

Taken together, these four distinct kinds of communication events produce a model of classroom interactions which the investigator has designated the PIT model, titled from the first letter of each of the three major types of events included.

Operationalizing the identification of classroom communication events involves the use of a coding scheme utilizing the symbol I to signify institutional events, P for personal events, T for task events, and M for events which cannot be clearly defined (events mixed innature). Further, institutional, task, personal, or mixed events involving the teacher with a single student (individual events) are indicated by the symbol i placed after the symbol characterizing the basic nature of the event (e.g., Ti, Pi, or Ii).

An important aspect of a communication event may be its duration. This facet is captured by tallying the appropriate reference symbol at the initiation of the event and marking continuance of the event with dots tallied at three-second intervals. If this system is used, an observer's coding of a group-task event occupying twenty seconds of classroom time would resemble the following: T

.
. .
. .
. .
. .
. .
. .

The IDER System

French and Galloway (1968) have developed a system for categorizing both teacher verbal and nonverbal behavior simultaneously. Major purposes of this study were to test the relevancy of the IDER system as a tool for providing useful, descriptive teacher-behavior data and to investigate the relationship of this data to the communication event structure previously outlined.

The IDER system utilizes the ten verbal categories of the Flanders system of Interaction Analysis and adds appropriate nonverbal dimensions to each. In classroom or videotape observation, the IDER system is used in much the same way as Flanders' Interaction Analysis. Behavior is recorded at three-second intervals using the numerical category designations accompanied by a slash (/) if nonverbal teacher behaviors are encouraging and a dash (-) if they appear to be restricting of further interaction. After coding a lesson, the observer plots his tallies unto the matrix, obtains column totals and percentages, calculates appropriate ratios, and analyzes apparent behavioral flow patterns.

The Matrix

When a classroom observer is concerned with both communication events and behavioral data, it becomes essential that these elements be brought together at some point in time and space. A scheme for plotting and interpreting both behavioral and communication event data is necessary.

A unique and essential ingredient of Flanders' Interaction Analysis is the utilization of a ten-by-ten matrix into which coded verbal behaviors are sequentially plotted: In addition to making various quantitative data easily accessible, this matrix allows the observer to note verbal emphases of instruction and verbal flow patterns during classroom interaction.

In order to preserve the capacities of the Flanders matrix when plotting both verbal and nonverbal behaviors and to provide a matrix capable of reflecting communication events in the classroom, this study utilized a matrix suggesting three dimensions or a superimposition of one kind of behavioral data over the other. When laid out in two dimensions, such a matrix provides four distinct areas for study.

When one views the ten Flanders' IDER categories with regard to their functions within the communication event model previously described, it becomes increasingly clear that specific categories have high probability relationships to particular kinds of events. For example, categories 1 (acceptance of student feeling) and 7 (criticism) appear to be integrally related to the concept of a personal event. Category 6 (direction-giving) seems closely related to the concept of institutional events. Categories 5, (lecture or information-giving), 4(questioning) and 8 (student talk, response) represent behaviors constituting the core of many task events, etc. Therefore, it appeared logical to cluster categories in terms of communication function for purposes of plotting behavioral data into the matrix. It was assumed that this clustering would cause typical behavior patterns within particular kinds of events to appear visibly in the matrix.

Figure I presents the matrix being described. To interpret data provided by this matrix, it is necessary to know that numbers from 1 through 10 represent Flanders' verbal categories when these are accompanied by encouraging nonverbal cues. Numbers 11 through 20 represent the same categories accompanied by restricting nonverbal expressions.

Quadrant I of the matrix provides data regarding communication events composed of verbal behaviors consistently accompanied by encouraging non-verbal cues. Quadrant III supplies data regarding communication events composed of verbal behaviors consistently accompanied by restricting non-verbal expressions, and quadrants II and IV provide insight into patterns of behavioral transition.

Videotape

Classroom activities analyzed in this study were recorded on one-half inch videotapes, and observational methods were applied to the videotaped episodes. While half-inch videotaping equipment does not provide premium quality in either image or sound, these features are adequate, and videotaping offers the desirable features of permanency, opportunity for repetition, and opportunity for application of several research techniques.

Subjects

The population of the study consisted of twelve junior high school teachers, seven males and five females, drawn from a single junior high school in Columbus, Ohio.⁴ The twelve teachers were equally distributed across the subject areas of English, mathematics, social studies and science. No subject was a first year teacher, but none had taught more than ten years. All teachers in the study were Caucasian, although all of their pupils were not.

No inducements of any kind were used to obtain teacher participation in the study, and prospective subjects were not informed of the exact nature of the study. They were told only that :

- 1) Three of their lessons would be videotaped.
- 2) They would be informed at least two days prior to a videotaping session, and that they would have the option of refusing a taping session during the designated period or day.
- 3) The purpose of the research was to develop teacher training techniques and systems of classroom observation and that there would be no attempt to evaluate teachers and/or schools.

⁴It is recognized that teachers in Columbus, Ohio, may not be representative of teachers in other urban school systems. For one thing, the location in this city of Ohio's largest state university may influence the kind and quality of teachers in the system.

- 4) They should not plan to do anything "special" for the videotaping sessions.
- 5) They would have access to any or all videotapes for purposes of self-observation.

Procedures of Data Collection

Once subjects had been selected, the investigator videotaped three periods⁵ of classroom interaction in each subject's classroom.⁶ At least two of the tapes involved the same class of pupils. All tapes were made between April 15, 1968 and May 22, 1968. Procedures for physically recording a lesson on videotape were the same in all classrooms.

After taping, the investigator coded the contents of the total thirty-four tapes using two independent observation procedures: The PIT model and The IDER system. In addition, two judges coded and the investigator recoded the event structure (PIT model) of a sample of taped interactions derived in the following manner:

- 1) A population of twenty-four, 40-minute tapes was subdivided into 20 - minute segments.
- 2) From these forty-eight, 20 - minute segments, ten segments were randomly selected for coding by the investigator and two other judges.
- 3) The investigator coded the ten selected segments twice at an interval of at least two weeks' time.

Behavioral (IDER) tallies were plotted into the specially designed matrix. Percentages of interaction devoted to institutional events, personal events, task events, and mixed events by each teacher in each lesson, each teacher in all three of his/her lessons, all males/females in all lessons, and by all teachers in all lessons were computed.

⁵ A period was defined as that length of time designated by the school system for instruction of a given class in a given subject during any given day (40 minutes).

⁶ There was one exception. One subject indicated after the initial taping that he had finished his course work for the year and that he did not wish to be taped again. This reduced the sample tapes to thirty-four.

A coefficient of concordance was derived to signify the degree of agreement among the several judges concerning the communication event structure in videotapes which they analyzed and communication event types were analyzed for their behavioral content.

RESULTS

Data obtained in this study were of three types: (1) that obtained using the IDER system of behavioral analysis; 2) that obtained using the PIT communication model; and 3) that obtained by applying behavioral analysis techniques (IDER) to communication (PIT) events. Time here allows us to inspect only selected data and findings of each type.

IDER Data

Use of the IDER system resulted in matrices representing: (1) each lesson taught by each subject ; (2) all three lessons taught by each subject; (3) all lessons taught by the seven male subjects; (4) all lessons taught by the five female subjects, and (5) all lessons taught by all subjects. Suffice it to say that verbal and nonverbal behavior patterns of individual subjects remained consistent throughout the three lessons analyzed and that relatively few behavioral differences between male and female subjects obtained.

Figure 2 presents the matrix containing behavioral data representative of the total thirty-four lessons taught by all twelve subjects. As evidenced in the matrix, 83.1 percent of all teacher nonverbal behavior exhibited was encouraging and an E/R ratio of 4.971 obtained.

Subjects devoted 38.7 percent of all interaction to lecturing or information-giving (category five) and 12.7 percent to questioning (category four). Students talked 17.8 percent of the time (total behaviors in categories eight and nine), and the teacher category least used was category

one (acceptance of student feeling) which appeared less than 0.1 percent of the time.

Teacher verbal influence was quite direct when content - oriented categories (questioning and lecturing) were considered (an I/D ratio of .466), but a balance between indirect and direct verbal influence obtained when categories four and five were not considered (revised i/d ratio of 1.185). In the classrooms of these subjects, teachers talked approximately 75 percent of the time (S/T ratio of .264).

FIGURE 2

IDER ANALYSIS OF THIRTY-FOUR LESSONS TAUGHT BY THE TWELVE SUBJECTS

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	T
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
T	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0.1	1.9	4.2	1.0	3.6	11.7	44.2	10.8	7.4	15.2	0.2	3.1	6.4	3.8	47.1	3.6	11.2	13.4	1.8	9.3	
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	135
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	135
5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	400
6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	153
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1138
8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	170
9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	781
10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	690
11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	166
12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	617
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4256
14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
T	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1	0.0	3.3	4.2	0.2	1.2	9.2	29.5	21.6	17.1	11.6	0.1	3.3	12.2	3.4	7.6	4.2	25.0	18.9	5.9	19.4	
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
T	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1	0.0	1.7	3.5	0.7	2.8	9.5	35.6	10.0	6.9	12.4	0.0	0.5	1.6	0.6	4.5	0.7	3.1	2.7	0.7	2.4	
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
T	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

E/R - 4.971

S/T - 0.264

1/d - 1.185

1/D - 0.466

PIT Data

Application of the PIT communication model to the thirty-four lessons taught by the twelve subjects provided a variety of information concerning subjects' participation in communication events. Table 1 presents data concerning the event structure found in the three lessons taught by each subject.

The thirty-four lessons contained 1705 separate communication events. Of this total, 1173 events were task-oriented with 794 of the task events involving groups of students and 379 task events occurring between the teacher and a single student.

If all mixed events are discounted, group-centered personal events occurred less often than any other type. While it is interesting to note that personalized communications between teachers and groups of students appeared so seldom, this finding supports a logical suggestion that it is difficult to deal with affective concerns in group-focused communication.

The figure representing the occurrence of individual mixed events (two occurrences) is also interesting. Apparently, classroom communication is less likely to break down when it involves one-to-one relationships.

Additional data pertaining to communication events and those obtained through conjoint use of the PIT model and IDER system probably can be presented best as they relate to specific hypotheses of the study.

Results Relevant To Specific Hypotheses of The Study

Twenty-four hypotheses were derived by the investigator, but only data and results relevant to a few of the most significant can be presented here.

TABLE 1
COMMUNICATION EVENT STRUCTURE OF THE THREE LESSONS TAUGHT BY EACH SUBJECT

Subject	Task		Personal		Institutional		Mixed		Total
	Group	Individual	Group	Individual	Group	Individual	Group	Individual	
1 ^a	56	54	5	4	20	6	2	0	157
2 ^a	61	27	0	1	31	18	5	2	145
3	46	45	0	4	55	45	10	0	205
4	88	19	1	2	20	10	4	0	144
5 ^{a, b}	23	9	6	2	10	2	1	0	53
6 ^a	61	39	2	1	8	5	3	0	119
7	45	8	1	1	20	22	5	0	102
8 ^a	97	29	1	3	13	10	2	0	160
9	105	29	2	12	26	22	1	0	197
10 ^a	61	80	3	9	9	15	7	0	184
11 ^a	75	23	0	1	21	10	3	0	133
12	76	7	0	4	11	6	2	0	106
Total	794	379	21	44	249	171	45	2	1705

^aMale subject.

^bTotals based on only one lesson.

Hypothesis A 10.

Teacher nonverbal behaviors within categories 2 and 3 will be significantly more restricting than encouraging regardless of the type of communication event in progress.

Hypothesis A 11.

Teacher nonverbal behaviors within categories 8 and 9 will be significantly more restricting than encouraging regardless of the type of communication event in progress.

Hypothesis A 10 reflected a concern for the nature of real teacher praise and encouragement (category 2) and real acceptance and utilization of student ideas as opposed to apparent praise, encouragement or acceptance assessed by the content of the verbal message only. There was also in this hypothesis an attempt to gain some insight into the teacher's perception of his classroom role as he implements this understanding through his behavior.

Hypothesis A 10 is supported only partially by the findings. As Table 2 indicates, subjects in this study devoted 1.3 percent of all classroom interaction to category 2 of the IDER system (praise and encouragement). Of this amount, .7 percent contained encouraging teacher nonverbal cues and .6 percent contained restricting teacher nonverbal behaviors. These statistics do not support the hypothesis as it relates to category 2. However, Table 2 also reports that subjects in the study devoted 7.3 percent of all classroom interaction to category 3 of the IDER system (acceptance and utilization of student ideas). Of this amount, 2.8 percent contained encouraging teacher nonverbal behaviors, and 4.5 percent contained restricting teacher nonverbal cues. As it relates to the use of category 3, hypothesis A 10 is substantiated by the findings.

TABLE 2

PERCENTAGES OF ENCOURAGING AND RESTRICTING TEACHER NONVERBAL BEHAVIOR OCCURRING
IN SELECTED CATEGORIES OF THE IDER SYSTEM

Category	Percent of Total Behavior					
	Male Subjects		Female Subjects		All Subjects	
	Encouraging	Restricting	Encouraging	Restricting	Encouraging	Restricting
2	.5	.6	1.0	.6	.7	.6
3	2.3	5.0	3.4	3.8	2.8	4.5
8	6.7	.8	7.2	.6	6.9	.7
9	6.6	.6	13.1	.7	9.5	.7

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Teacher acceptance and use of pupil ideas tended to be perfunctory rather than implementing in nature.

Table 2 suggests that hypothesis A 11 was not supported by the findings of the investigation. Subjects in the study devoted 7.6 percent of all interaction to category 8 (student talk, response), but during only .7 percent of this time were teacher nonverbal cues restricting of further interaction. Teachers demonstrated attentiveness and responsiveness during 6.9 percent of the total 7.6 percent of interaction in category 8. Category 9 (student initiated talk) accounted for 10.2 percent of all interaction, and teacher nonverbal behaviors in this category were restricting only .7 percent of the time.

Hypothesis A 12.

There will be no significant relationship between the proportion of direct verbal behavior and the proportion of restricting nonverbal behavior exhibited by subjects in this study.

Hypothesis A 13.

There will be no significant relationship between the proportion of indirect verbal behavior and the proportion of encouraging nonverbal behavior exhibited by subjects in this study.

Hypothesis A 14.

There will be no significant relationship between the maleness or femaleness of the subjects in this study and the proportions of encouraging and restricting nonverbal behaviors which they exhibit.

Hypothesis A 15.

There will be no significant relationship between the maleness or femaleness of the subjects in this study and the proportions of indirect and direct verbal behavior which they exhibit.

It was the investigator's contention that directness or indirectness of teacher verbal behavior and the encouragement or restrictiveness of teacher nonverbal cues were not proportionately related. Hypotheses A 12 and A 13 were designed to insure measurement of the interrelationship of these factors.

It can be readily seen that hypotheses A 12 is supported by the data in Table 3. All subjects tended to be more encouraging than restricting in their nonverbal behaviors, although some demonstrated higher degrees of encouragement than others. There was no apparent, direct relationship between the directness of verbal behavior and the restrictiveness of nonverbal behavior exhibited by subjects in this study.

Hypothesis A 13 also receives support from the data in Table 3. Although all subjects tended to be encouraging in their nonverbal behaviors, their I/D and i/d ratios varied considerably. No subject consistently exhibited indirect verbal influence as reflected in the I/D ratio. When information - giving and questioning behaviors were removed from consideration, eight of the twelve subjects exhibited slightly more verbal indirectness than directness. However, subjects' rankings by i/d ratio would not correspond with rankings by E/R ratio.

Hypotheses A 14 and A 15 reflected the investigator's contention that instructional behavior has no direct relationship to the sex of the teacher. Data in Table 3 support both hypotheses.

Although further research evidence is needed, the data reported here strongly suggest that a teacher's total behavior cannot be evaluated on the basis of his verbal behavior alone, nor can it be assumed that factors such as sex greatly influence the behavior patterns exhibited.

TABLE 3

MALENESS/FEMALENESS OF SUBJECTS RELATED TO
I/D, i/d, AND E/R RATIOS

Subject	Sex	Composite I/D Ratio	Composite i/d Ratio	Composite E/R Ratio
1	M	.199	.447	19.529
2	M	.943	.944	1.637
3	F	.377	.464	1.045
4	F	.557	1.293	7.445
5	M	.087 ^a	1.059 ^a	3.935 ^a
6	M	.809	2.477	10.607
7	F	.243	.697	5.538
8	M	.833	2.764	2.802
9	F	.748	1.269	11.141
10	M	.127	1.371	13.344
11	M	.351	2.386	5.255
12	F	.929	1.720	11.192
All Males		.415	1.373	5.075
All Females		.549	1.017	4.847

^a Ratios based on the contents of one lesson.

Hypothesis B1

Institutional, personal, task and mixed events can be consistently and reliably recorded by classroom observers.

This hypothesis reflected an attempt to test the value of the PIT model as a tool for analyzing classroom communication. The investigator and two judges coded a randomly selected sample of ten, twenty-minute lesson segments. To these codings, the investigator's original coding was added, then, the codings of each judge for each lesson segment were ranked using the total number of task events tallied as the basis for rank. Table 4 indicates the rankings given each judge's coding of each tape.

From these rankings, a coefficient of concordance was computed to signify the degree of agreement among the several judges. Kendall's formula (Downie and Health, 1965) was used to obtain this coefficient. The coefficient obtained using the described method was .76 which, according to Kendall's table is significant at the .01 level. Therefore, the findings supported hypothesis B1.

Hypothesis D1

Significantly more interaction will be devoted to task events than to personal, institutional or mixed events.

Hypothesis D2

Least interaction will be devoted to personal events.

Hypothesis D1 and D2 reflected the investigator's contentions regarding the expenditure of time in junior high school classrooms. Data presented in Table 5 directly relate to these hypotheses.

Hypothesis D1 was supported by the findings reported in the table. Of a total of 1715 events recorded, 1173 were either group or individual task events. Of an average of 50.4 events per 40 - minute lesson, 34.5 events were task oriented.

TABLE 4

JUDGES' RANKINGS OF TASK EVENTS
IN VIDEOTAPED LESSONS^a

Videotape	1 ^b	2 ^c	3	4
1	5	5	3	5
2	9	9	5	8
3	2	2	6	4
4	4	6	9	6
5	6	8	8	9
6	10	10	10	10
7	8	7	7	7
8	1	1	4	1
9	3	3	2	3
10	7	4	1	2

^a Highest ranking by greatest number of task events recorded.

^b Rankings based on the investigator's original coding.

^c Rankings based on the investigator's second coding.

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TABLE 5

CLASSROOM EVENT STRUCTURE

Event 19	Total Number (all lessons)			Average Number Per Lesson			Percentage of Total Events		
	Males ^a	Females ^b	All Subjects	Males	Females	All Subjects	Males	Females	All Subjects
Task (G) ^c	434	360	794	22.8	24.0	23.4	45.1	47.8	46.3
Task (I) ^d	271	108	379	14.3	7.2	11.1	28.2	14.3	22.9
Institutional (G)	117	132	249	6.7	8.8	7.6	13.3	17.5	15.1
Institutional (I)	66	105	171	3.4	7.0	5.0	6.9	13.9	9.9
Personal (G)	17	4	21	.89	.27	.62	1.7	.5	1.2
Personal (I)	22	22	44	1.2	1.5	1.3	2.3	2.9	2.6
Mixed (G)	23	22	45	1.2	1.5	1.3	2.4	2.9	2.6
Mixed (I)	2	0	2	.10	.00	.06	0	0	0
All Events	952	753	1705	50.4	50.2	50.4	99.9	99.8	100.6

^aStatistics based on 19 lessons.^bStatistics based on 15 lessons.^cSymbol used to identify group events.^dSymbol used to identify individual events.

Task events, either group or individual accounted for 69.2 percent of all events recorded.

In creating hypothesis D2, the investigator did not intend to consider mixed events which, by their nature, should account for only a slight percentage of classroom interaction. However, a comparison of the statistics regarding personal and mixed events is interesting. The investigator coded a total of 65 personal events and 47 mixed events. The average number of personal events per lesson, either group or individual, was 1.9 while the average number of mixed events per lesson was 1.4. Personal events comprised 3.8 percent of all events, and mixed events constituted 2.6 percent of all events.

When considering only the three major types of communication events, far less time was spent by these junior high school teachers in personal communication with students than in either task - or institution - oriented communications.

Hypothesis D5

The average amount of time spent in single task events will be significantly greater than the average amount of time spent in either institutional or personal events.

Hypothesis D5 indicated an attempt to study the duration of communication events and their relationship to each other in time. Table 6 presents relevant findings.

The data provide strong support for the hypothesis as it applied to group centered, task events. The average amount of time spent by subjects in these events was twice as much as that spent in group-centered, personal events, the closest competitor among the forms of institutional and personal events.

TABLE 6:

AVERAGE AMOUNTS OF TIME IN SECONDS SPENT
IN SINGLE COMMUNICATION EVENTS

Event	Male Subjects	Female Subjects	All Subjects
Task (G)	70	79.7	73.9
Task (I)	43.8	29.0	37.6
Institutional (G)	28.6	32.8	30.3
Institutional (I)	12.7	10.6	11.8
Personal (G)	36.8	20.0	30.5
Personal (I)	14.1	18.3	16.1

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Although the average amount of time spent in single individual, task events was only about seven seconds greater than that spent in group-centered, personal events, seven seconds represents more than a twenty-three percent increase in time expenditure when compared with the thirty second allotment to personal group events.

It is interesting to note that the average amount of time spent by subjects in group-centered events of all kinds was significantly greater than the average amount of time spent in individual-centered events. Reflection upon these statistics might provide interesting thoughts concerning the individualization of instruction, and the problems involved in communicating with an individual in a group setting.

DISCUSSION

What can finally be said of this study employing several observational tools resulting in a multitude of rather diverse findings ? First, the limitations of the investigation (its population, sampling procedures, the sensitivity of the instruments used) must be kept in mind. Little, if anything, concerning communication in all classrooms can be generalized from this study. However, the findings do provide empirical information which did not exist heretofore:

- 1) As indicated in numerous ways, nonverbal behavior cannot be ignored. The data clearly show that what teachers do is as important as what they say, and that there is no direct relationship between verbal and nonverbal influence. The nature of one cannot be presumed from knowledge of the content of the other. Furthermore, certain kinds of teacher behavioral influence can be carried out either verbally or nonverbally. Verbal utterance is not always essential to teacher praise, encouragement, acceptance of student feeling or ideas, question-asking,

direction-giving or criticism.

- 2) The original question concerning the utility of the PIT model clearly has been answered. The model has proved both meaningful and useful. PIT offers a new prospective on "the way teaching is," but this does not mean that it cannot be refined and improved.
- 3) There is a lack of emphasis placed upon personalized communications (those focusing on personal interests, needs, and expectations) in junior high school classrooms.
- 4) Instructional procedures in the junior high school classroom, at least these dependent upon communication and interaction between teachers and students tend to focus more upon the group than upon the individual within the group.
- 5) There is value in observing and analyzing the same classroom interaction and communication processes by means of more than one instrument. In this particular study, the expanded information provided by an analysis of behavior within the larger context of communication events has proved valuable.

Perhaps the value of the investigation rests as much in the implications and needs for further research which it presents as in the findings it offers. Obviously, replicative studies at several levels and in several types of classrooms are needed. The findings concerning the relationship of nonverbal cues to specific verbal behaviors (categories 2,3,8,9, of IDER) suggest that theory and research focusing on the relationship between classroom communication and the perceived institutional roles and expectations of both teachers and pupils could be most meaningful. The conclusions that personal communications were not emphasized in the classrooms of the subjects observed and that significantly

more time was allotted to group-oriented communications than to communications between the teacher and an individual student point up the need for theory and research exploring the relationship between communication elements and the individualization of instruction. An important focus of researchers in this area may be the particular significance of nonverbal cues. At any rate, this investigator is now more aware than ever before of the complexity of the challenge to educators to improve teaching and learning.

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